Remarks

Claim Objections:

Claim 4 was objected to because it refers to "said receiver further comprises . . . "
where no receiver previously was mentioned in claim 4. The Examiner suggested that
claim 4 should read ". . . said transmitter further comprises . . ." In response, claim 4 has
been amended accordingly.

Rejections Under 35 USC 102:

Claims 1-17 and 20-21 were rejected under 35 USC §102(b) as being anticipated
by Bar-David (US Pat. No. 5623511).

The Applicants provide for a method and apparatus for efficient Quadrature code
position modulation (CPM). As stated by the Applicants, each transmitted symbol is
represented by an M-chip PN sequence. K bits of information can be encoded into each
symbol by circularly shifting the M-chip sequence to one of $N=2^k$ positions (where 2^k is
less than or equal to M).

The Applicants invention allows for only one PN sequence to be stored in the
transceiver device, thus resulting in a reduction of circuit complexity. More particularly,
a single PN sequence is used for both I and Q channels, the only difference being that the
single sequence is **reversed** for one of the channels. Thus, one channel uses a time-
shifted version of the PN sequence, while the other channel uses a time-shifted version of
the **reversed** PN sequence. This is specifically claimed in independent claims 1, 7, 11,
12, 13, 14, and 17.

Analysis of Bar-David reveals that Bar-David fails to teach or otherwise suggest
the Applicants' claimed step of time-shifting and **reversing** a code sequence. Because of
this, all independent claims are in proper condition for allowance.

Notwithstanding the above arguments, the Applicants have amended their claims
to better point out and clarify what the Applicants regard as their invention. Specifically,
all independent claims have been amended to include the fact that the PN sequences are
circularly shifted. As discussed above, each transmitted symbol is represented by an M-
chip PN sequence. K bits of information can be encoded into each symbol by **circularly**
shifting the M-chip sequence to one of $N=2^k$ positions (where 2^k is less than or equal to
M). Analysis of Bar-David reveals that Bar-David fails to teach or otherwise suggest
circularly shifting code sequences, instead Bar-David simply time shifts such sequences

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by advancing or delaying the code word relative to a nominal symbol position. Because of this, claims 1, 7, 11, 12, 13, 14, and 17 are in proper condition for allowance.

Claim Rejections Under 35 USC 103(a):

Claims 18-19 were rejected under 35 USC §103(a) as being unpatentable over Bar-David in further view of Horne (US Pat. No. 6798825). Because claims 18-19 depend from allowable base claim 17, claims 18-19 are in proper condition for allowance.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein; and no amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references. As the Applicant has overcome all substantive rejections given by the Examiner the Applicant contends that this Amendment, with the above discussion, overcomes the Examiner's rejections to the pending claims. Therefore, the Applicant respectfully requests allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter. Finally, please charge any fees (including extension of time fees) or credit overpayment to Deposit Account No. 502117.

Respectfully Submitted,
Gorday, ET AL.

by:_____

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